

# *Medicine Bow Fuel & Power LLC*

*Presentation to Wyoming Infrastructure Authority*

*January 31st, 2012*

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# Agenda

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- Medicine Bow Project Overview
- Project Financing Summary
- Project Benefits to Wyoming
- Summary & Conclusions



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# ***Medicine Bow Project Overview***

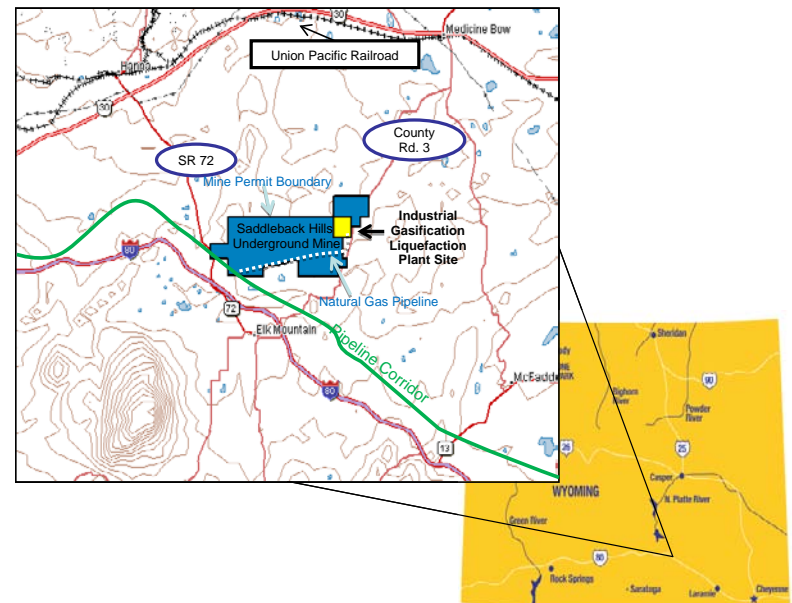
# Medicine Bow Project Summary

## Summary

<b>Expected Cost</b>	\$1.7-\$2.0 billion
<b>Location</b>	Medicine Bow, Wyoming
<b>Expected Production</b>	<ul style="list-style-type: none"><li>• 10,600 bpd of gasoline and LPGs per phase</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• GE 900 ft<sup>3</sup> Quench gasifiers</li><li>• UOP Selexol and Sulfur Recovery</li><li>• Davy Methanol Synthesis</li><li>• ExxonMobil Methanol-to-Gasoline</li></ul>
<b>Construction Period</b>	42 months from Financial Close
<b>Anticipated COD</b>	December 1, 2015
<b>EPC Contractor</b>	Major EPC Contractor
<b>O&amp;M Provider</b>	Renowned Operator
<b>Coal Feedstock</b>	Arch Coal Inc. ("Arch")
<b>Gasoline Offtaker</b>	Vitol, Inc.
<b>CO<sub>2</sub> Offtaker</b>	Denbury Onshore LLC ("Denbury")
<b>Electricity Provider</b>	Carbon Power and Light, Inc.
<b>Gasoline Pipeline</b>	Major pipeline company
<b>Lender's Engineer</b>	R.W. Beck
<b>Owner's Engineer</b>	Granherne (KBR)

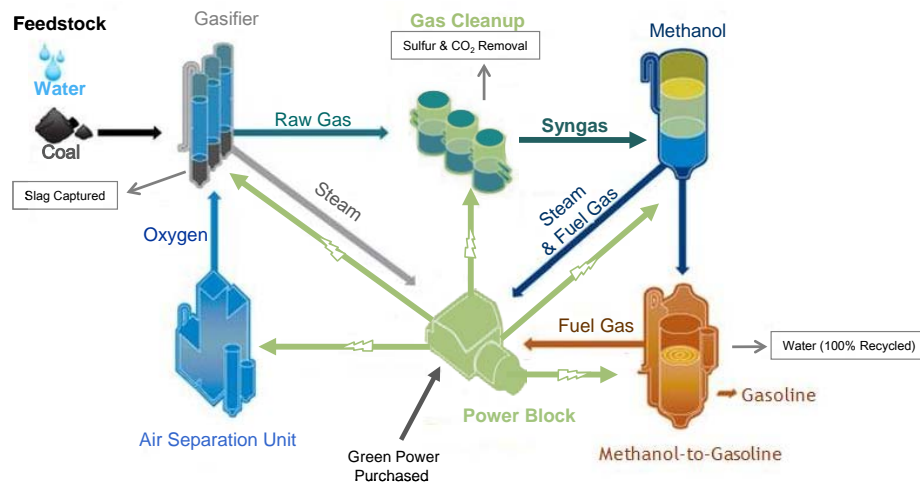
## Site Description

- Located on approximately 200 acres near the town of Medicine Bow, Wyoming in southeastern Carbon County
- Adjacent to the Elk Mountain Mine, a surface coal mine owned and operated by Arch, and a 180 million ton underground coal reserve known as the Saddleback Hills Mine, also owned by Arch
  - Amount and quality of coal has been confirmed by several reputable coal engineering firms, including Weir International
- Produced gasoline to be transported by pipeline to the Denver area



# Medicine Bow Technology

## Process



- Gasifier consumes approximately 4,400 stpd of coal, combining a coal/water slurry and oxygen to produce syngas
- The syngas is purified through several steps, including passing through activated carbon beds designed to remove mercury
- The gas flows to the Selexol exchanger and passes through two absorbers removing hydrogen sulfide and carbon dioxide
- Feed gas enters converters where it flows over a methanol synthesis catalyst causing methanol to condense out

## Integration Risk Mitigants

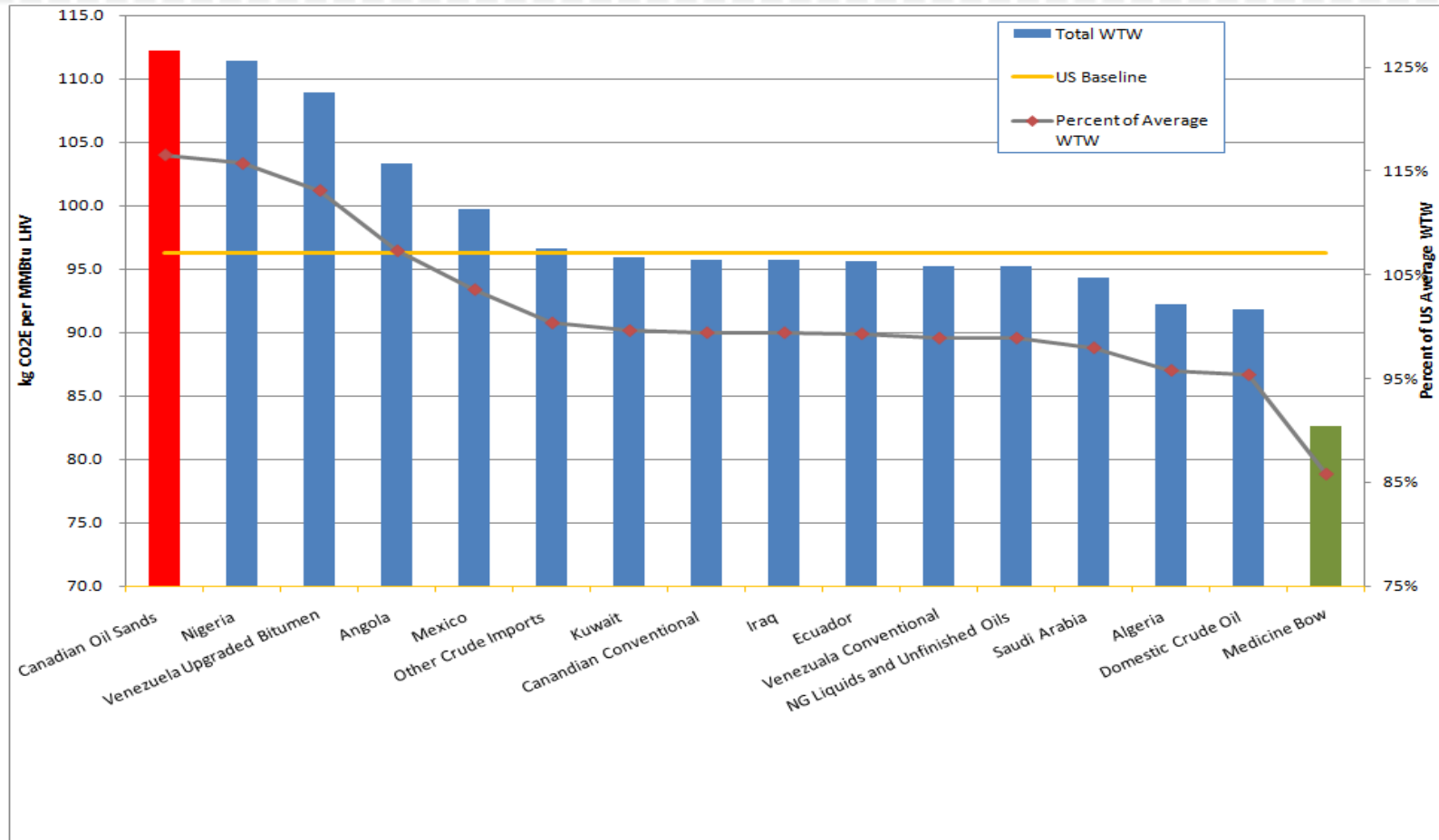
- Project utilizes mature, proven technologies from reputable providers to create the first major IGL facility in the U.S.
  - Each technology is sufficiently mature at the appropriate scale
  - The JAMG project in China began commercial operations in 2009 and is currently producing 2,500 bpd of gasoline from coal
- Several steps performed to ensure the Project is designed properly
  - Critical conversion processes modeled by technology licensors
  - Each technology supplier has provided a detailed, tailored process design package for the related equipment
  - Kvaerner worked closely with licensors during the FEED process
  - Each licensor will have teams present during commissioning and startup; performance tests will verify guarantee limits

## Advantages

- IGL technology can capture CO<sub>2</sub> cost effectively
  - 95% of the CO<sub>2</sub> is extracted during the gas clean up phase
- Produces a better CO<sub>2</sub> footprint than traditional refining
- IGL products are clean and processes conserve water
- Takes advantage of U.S. coal reserves

Processes have operated at commercial scale and have been vetted as a whole by R.W. Beck

# Low Wells-to-Wheels CO<sub>2</sub> Emissions Profile



**Medicine Bow “Well-to-Wheels” CO<sub>2</sub> emissions are better on a lifecycle basis than all other US refining alternatives. Compared to the marginal alternative, Canadian Oil Sands, Medicine Bow in Phase 1 will save 11.7 million tons of CO<sub>2</sub> emissions over the life of the Project.**



# ***Project Financing Plan***



## ***Proposed Financing Plan***

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- Private Bank Debt: \$800mm-\$1,100mm
- Tax Exempt Private Activity Bonds \$245mm
- Industrial Development Bonds Up to \$300mm
- Equity Remaining Amount

Final debt and equity package subject to firm commitments from all sources at financial close.

# ***Tax Exempt Private Activity Bonds***

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- Recently, the State has been allocated each year approximately \$275mm of federal tax exempt bond cap to be allocated to projects in Wyoming
- Projects that have certain “tax exempt” capital spending requirements are eligible to receive an allocation of this bond cap
- The Medicine Bow Project has approximately \$245mm of expenditures in the “solid waste disposal facility” category that qualify for this cap
- These bonds are based on the credit of the project --- not the county --- and are sold in the private bond market and go through due diligence by the bond buyer’s and their investment bankers
- The project is requesting through a resolution by the County that the State allocate \$245mm of this cap to the project (W.S. 9-1-219(a) and Rules of the Governor’s Office)

# Industrial Development Bonds

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- The State has an Industrial Development Bond program to purchase bonds from projects in Wyoming to support the development of business in the State and create employment opportunities in Wyoming (W.S. 9-4-715(m))
- These bonds would be purchased by the State from the State Mineral's Trust
- The bond application is reviewed by the Wyoming Business Council who will then make a recommendation to the State Treasurer, the Governor and Attorney General. These offices may conduct additional due diligence once they receive the recommendation.
- The bonds will be issued by the county, but based solely on the credit worthiness of the project.
- The legislation provides for a cap \$600mm of state funds to allocated for this purpose
- The resolution being considered by the county, would authorize the county to issue up to \$300mm of Industrial Development Bonds for the project



## ***Project Benefits to Wyoming***

# ***Commercial Clean Coal Industry Benefits to Wyoming***

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- Value added to Wyoming's most abundant energy resource
  - Increases the value of the coal resource in Wyoming
  - Leads to investment in the State to add value to coal
- Provides quality employment and career opportunities for Wyoming citizens
  - MBFP integrated CTL facility alone will provide 415 permanent jobs
- Preserves and enhances the Wyoming coal industry
  - Introduces a new market for Wyoming coal
  - CTL projects will directly link coal's value to oil
- Broadens the research and development platform within the state
  - Potential collaboration with the University of Wyoming
  - Creates and preserves a 21<sup>st</sup> century “brain trust” and technology use throughout Wyoming
- Builds upon an energy industry in which Wyoming is already a major player
  - Expands Wyoming production of refined transport fuels
  - Utilization of CO<sub>2</sub> for EOR expands Wyoming oil production from existing fields

## Medicine Bow Project: Direct Benefits to Wyoming

Type of Benefit	Estimated Amount (\$mm)
Coal Severance Taxes	\$86.2
Coal Ad Valorem Taxes	\$136.8
Property Taxes	\$137.5
Oil Severance Taxes	\$307.4
Payrolls	\$703.2
Total	<hr/> \$1,371.1

*These benefits include only direct benefits and do not include benefits from multiplier effects such as employment and income from support industries such as housing*

## ***Medicine Bow Project: Estimated Job Creation***

	Construction	Operation
CTL Facility	1,650	200
Coal Mine	205	192
Related Infrastructure	360	23
Total	2,215	415

*2215 Construction jobs and 415 full time jobs*



## ***Summary & Conclusions***



# ***Why Wyoming Should Bring The Clean Coal Industry to America***

- **Economic forces: Escalating oil prices**
  - Competitively priced liquids transport fuels
  - Downward pressure on oil prices
- **Environmental benefits and opportunities**
  - Cleaner gasoline is produced with Coal-to-Liquids (CTL)
  - CO<sub>2</sub> captured and used safely
- **America's security: National and economic security**
  - A stronger American energy future, less dependent on foreign imports
  - Vital for both our national security and our economic security
- **The smart and strategic use of America's coal**
  - America's secure supply of coal: 26% of the world's coal supply means that we must use Advanced Fuel Technology for conversion to domestic fuel supplies, cleanly and strategically

